

AMENDMENT & RESPONSE UNDER 37 C.F.R. § 1.116 - EXPEDITED PROCEDURE
Serial Number: 09/077,572
Filing Date: October 13, 1998
Title: NON-TOXIC MUTANTS OF PATHOGENIC GRAM-NEGATIVE BACTERIA

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Clean copy of the pending claims 22-26, 29, and 32-34

22. (Amended) A method of making a mutant endotoxin comprising mutating an *htrB* gene encoding a wild type endotoxin in a wild type gram-negative bacterial pathogen to provide the mutant endotoxin; wherein the mutant endotoxin is the same as the wild type endotoxin except for lacking one or more secondary acyl chains of lipid A, and wherein the mutant endotoxin has substantially reduced toxicity when compared to the endotoxin of the wild type gram-negative bacterial pathogen.
23. A mutant endotoxin made according to the method of claim 22, wherein the mutant endotoxin was purified from the *htrB* mutant pathogen by phenol-water extraction or by protease digestion.
24. The mutant endotoxin according to claim 23, wherein the mutant endotoxin is conjugated to a carrier protein.
25. A mutant endotoxin made according to the method of claim 22.
26. The mutant endotoxin according to claim 25, wherein the mutant endotoxin is conjugated to a carrier protein.
29. (Amended) A method for producing endotoxin-specific antisera, the method comprising
- (a) immunizing an individual with a vaccine formulation comprising an *htrB* mutant of a gram-negative bacterial pathogen, endotoxin isolated from the *htrB* mutant of the gram-negative bacterial pathogen, or endotoxin purified from the *htrB* mutant of the gram-negative bacterial pathogen wherein the endotoxin is conjugated to a carrier protein; and

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(b) collecting antibody produced from the immunized individual;
wherein the *htrB* mutant endotoxin is the same as wild type endotoxin except for lacking one or more secondary acyl chains of lipid A.

32. The method of claim 22 wherein the gram-negative bacterial pathogen is of the genera *Haemophilus*, *Neisseria*, *Moraxella*, *Campylobacter*, *Shigella* or *Pseudomonas*.

33. The method of claim 29 wherein the gram-negative bacterial pathogen is of the genera *Haemophilus*, *Neisseria*, *Moraxella*, *Campylobacter*, *Shigella* or *Pseudomonas*.

34. (New) The method of claim 22, further comprising the step of purifying the mutant endotoxin.